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Difference in Quality of Life Between Group and Individual Exercise in a Faith-Based Sample

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by

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ABSTRACT

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There is limited data on the quality of life of individuals who exercise in a group versus individuals who exercise alone. The purpose of this study was to determine if there is a difference in the quality life between adults who attend an exercise class and those who exercise alone. Using the WHOQOL-BREF, 27 adult females were surveyed in Central California at two Church of Latter Day Saints locations. Ten females were enrolled in a group exercise class while 17 were individual exercisers. The data was analyzed using a *t*-test for independent samples to determine if there is a significant difference in scores.

There was not a significant difference in overall quality of life, environmental domain, and physical domain, but there was a significant difference in the psychological and social domains. Further research is recommended and benefits are detailed.

DEDICATION & MEMORIAM

For my mother, Lillian Louise Amburn (May 18th, 1952 to May 18th, 2009), from when you saw me as patient in a coma and to when I re-learned to walk you believed I would return to school. This thesis is a culmination of my work, your guidance, and the recovery from my brain injury. Words do not describe how I miss you and love you.

AKNOWLEDGEMENTS

My committee chair Dr. Epps, thank you for your guidance and patience, and thank you for being a strong advocate of this work. My two committee members, Dr. Byington, your knowledge in classes and statistical knowledge were a life saver and Dr. Verhovsek, thank you for convincing me to apply to this program. My wife, Rachel Elizabeth Amburn, you dealt with my work and always continue to push me.

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CHAPTER 1

INTRODUCTION

Quality of life is a theoretical construct that is determined by an individual's perspective of the world, health status, and personal relationships (Ventegodt et al., 2005). Related to health status, fitness scores have been found to have a relationship with quality of life. Sophie et al. (2007) found that people who participated in a three-week weight management program while increasing their distance with a six-minute walk time test [6MWT] have improved quality of life scores. Improvement of fitness scores and losing weight is positively associated with quality of life in these two studies.

The research on the relationship between quality of life and group exercise is limited. Courneya et al. (2004) found that group psychotherapy paired with home based exercise breeds success with continuing exercise in survivors of cancer. There is research on the effects of leisure activities performed in a group setting among adults with autism spectrum disorder, as the adults in the group leisure program experienced significant increase in quality of life. These same adults also experienced the positive effects of recreation activities and the positive influence these activities had on quality of life (García-Villamisar & Dattilo, 2010).

Religion plays a part in quality of life since many positive personal relationships are made inside religious institutions. Tarakeshwar et al., (2006) concluded that patients with advanced cancer who used positive religious coping versus negative religious coping had higher levels of perceived quality of life. Positive religious coping includes prayer, "religious appraisals of negative situations," (Tarakeshwar et al., p. 647) a relationship with a higher power, a belief in a "benevolent purpose to life" (Tarakeshwar et al., p. 647), and a "sense of connectedness with a religious community" (Tarakeshwaret al., 2006, p. 647). Negative religious coping includes a

"feeling of abandonment by God" and a "sense of disconnectedness with a religious community" (Tarakeshwar et al., 2005, p. 647). Vredeveld (2009) concluded that positive religious coping helps a person regulate emotion and find meaning in a situation. When an individual has experienced stressful life events, religious coping has been positively associated with increased adjustment to those stressors (Tix & Frazier, 1998).

There does not appear to be research on the effects of group exercise on the quality of life of religiously affiliated individuals. More specifically, there does not appear to be any research on the effects of group exercise within the population of the Church of Latter Day Saints (LDS). The Church of Latter Day Saints could benefit from this study by knowing the effects and benefits of the exercise class in their church. Having this knowledge will allow them to take measurable action with the class. In other words, the church may expand the class and offer it at more LDS churches.

Statement of the Problem

While there are studies on the effects of exercise and religion on an individual's quality of life, there are no studies focused on the effects of group exercise versus individual exercise in a religious community.

Purpose of the Study

The purpose of the study is to determine if there is a difference in the quality life between adults who attend a boot camp style exercise class and those who exercise alone. The adults who were surveyed in the group exercise class are from various LDS churches in Central California and are part of the Church of Latter Day Saints. The second group is part of a LDS also located in Central California.

Research Questions

1. Is there a difference in the quality of life scores between those who exercise in a group (Group 1) and those who exercised alone (Group 2)?
2. What is the difference in the Physical domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?
3. What is the difference in the Social domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?
4. What is the difference in the Psychological domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?
5. What is the difference between the Environmental domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?

Significance of the Study

There is research that quality of life is improved through exercise (Martin, Church, Thompson, Earnest, & Blair, 2009), and literature on faith based exercise classes inside African American churches. However, there is not literature on exercise groups involving the LDS Church.

Delimitations

The study is delimited to the participants of this study. To be included in the study of the group participants, individuals had to attend the exercise group at least four times a month. To be included in the individual exercise group the participants had to self-report exercising for one hour a week.

Limitations

1. The participants in the exercise class are from different churches while participants in the individual exercise group are from the same church. Since the exercise class participants are from different churches, this means they are in different parts of Central California. The different locations of the churches may differ by income, education level, and marital status. These factors can affect quality of life.
2. Results from the WHOQOL-BREF scale were based on self-reported responses and could include dishonesty or bias.
3. The participant's perception of exercise may not have met the requirements of the study to be considered exercise, and participants could exercise more than one hour outside of the requirements of the study.
4. People who attend the exercise group are going to be inherently different than those who exercise alone. The individual may be motivated to exercise in a group because they are seeking companionship, and the opposite may be true of a person exercising alone as they may want to be alone. These factors may affect quality of life.
5. I cannot control for other factors outside of exercise can affect someone's level of quality of life.

Operational Definitions

The following terms were defined for the purpose of this study:

Latter Day Saints (LDS): The Church of Jesus Christ of Latter-day Saints, the formal name of the movement popularly called Mormonism, is often abbreviated to LDS or the LDS Church, and members often simply refer to the Church. Its members can, similarly, be called Saints, Latter-day Saints, LDS, or Mormons (James, 2003, p. 1). The members of this church were referred to as Mormons for this study.

Quality of life (QOL): This term refers to an individual's social, spiritual, psychological, physical, and emotional well-being. Quality of life is influenced by multiple factors that include subjective measures (happiness and satisfaction), existential measures (fulfillment of needs and satisfaction with life's spatial domains), and objective measures (income, status, work) (Ventegodt et al., 2005).

Exercise: Defined as meeting U.S. Department of Health and Human Services and Centers for Disease Control and Prevention (2008) guidelines on physical activity for adults. This includes 2.5 hours or more of cardio vascular activity and two days of weight training. Physically active was also used to reference exercise in this study.

Boot Camp: Defined as a series of exercises performed in a circuit. The exercises are designed to challenge the individuals so that they are manageable but challenging.

WHOQOL-BREF: Assessment that has been statistically validated across cultures that helps determine a person's perceived quality of life.

CHAPTER 2

LITERATURE REVIEW

Quality of life is a concept; in fact, "papers over the past 20 years [have shown] that a precise [and] shared definition is a long way off" (IESE Insight, 2013). Various definitions of quality of life exist from Ventegodt et al.'s (2005) which includes modifiable factors such as attitudes or a person's general philosophy on life, to Gallien, Bian, Kim, and Anye's (2014) subjective measure of well-being and how a person enjoys the possibilities of his or her life. Each definition of quality of life does come closer to a standard definition. Schalock (2004) wrote that "'core quality of life indicators' should be thought of as QOL domain specific perceptions, behaviors, or conditions that give an indication of the person's well-being [and] these indicators are currently being operationalized and used in QOL measurement" (p. 205). These domains include emotional well-being, interpersonal relations, material well-being, personal development, physical well-being, self-determination, social inclusion, and rights (Schalock, 2004).

The World Health Organization (WHO) defines Quality of Life as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." (World Health Organization, 1997, p. 1). The WHO also specifies domains such as physical, psychological, level of independence, social relationships, environment, and religious/spiritual that are a part of quality of life (The WHOQOL Group, 1995). For the purposes of this study, I am using the WHO's version of quality of life.

Physical Activity and Quality of Life

A number of recent studies have included physical activity as it relates to quality of life. Martin, Church, Thompson, Earnest, and Blair (2009) found that exercise, specifically moderate training intensity, improves mental and physical quality of life, but that the improvements were dependent on how much a person exercises. Rasmussen and Laumann (2014) studied adolescents' exercise patterns and found that exercise in adolescence predicted positive moods in adulthood. Akinpelu, Akinola, and Gbiri (2009) studied the relationship between "adiposity indices (body fat amount) and quality of life" (p. 347-348) and found that people with higher levels of adipose tissue have lower levels of quality of life. They noted that while there was no way to determine if there was a cause and effect relationship, there was a correlation between adipose tissue and quality of life.

Mura, Sancassiani, Migliaccio, Collu, and Carta (2014) conducted a randomized controlled trial to measure the long-term influence that exercise has on quality of life in an elderly population. One group participated in postural gymnastics during which the participants' heart rates did not rise above 40% of the heart rate reserve (HRR). The second group participated in vigorous physical activity and had heart rates ranging from 60 to 80% HRR. They found that both groups had an increased level of quality of life, but the vigorous activity group maintained their increased quality of life above the baseline score after a 12 week follow up.

In a longitudinal study of 1,926 women, Choi et al. (2013) found that "participants who remained inactive [experienced] the greatest decline in health related-QOL after 7 years" (Choi et al., 2013, p. 2014). The "participants who increased their [moderate or vigorous physical activity (MVPA)] level from no MVPA to low or moderate-high MVPA were more likely to maintain or improve their HR-QOL after 7 years" (Choi et al., 2013, p. 2014). Choi et al. (2013)

also found that "women who initially reported no or low MVPA and increased their MVPA levels had increased odds of maintaining or improving their HR-QL in a dose–response pattern, and women who maintained their moderate-high MVPA level enjoyed the highest HR-QOL levels and had a higher probability of preserving or improving their high-level HR-QOL" (p. 2015). Although the results of this study support the idea that exercise improves mental and physical quality of life, they don't address whether people will continue with exercise beyond the bounds of the study.

Tucker, Welk, and Beyler (2011) conducted a study on compliance with Physical Activity Guidelines for Americans (PAGA) in which adults wore accelerometers for seven days. They found that men had higher levels of physical activity than women. Physical activity levels were higher in adults who were a normal weight, and the participants over-estimated their physical activity since only 10% of the participants were compliant according to the accelerometers. The authors concluded that even though physical activity levels were higher in this study when compared to other studies, the participants still need to increase their activity levels to reap the benefits of exercise (Tucker, Welk, & Beyler, 2011).

Faith-Based Physical Activity

Churches play an important part in helping their congregations meet physical activity guidelines. McNabb, Quinn, Kerver, Cook, and Karrison (1997) documented the impact of a physical activity program in an African American church. In the study, 39 women enrolled and were divided into experimental exercise and non-exercise control groups for 14 weeks. (McNabb, Quinn, Kerver, Cook, & Karrison, 1997). The experimental group participants lost an average of 10 lbs. and the control group gained an average of 1.9 lbs. The researchers considered African American culture when crafting the study. For example, researchers encouraged "weight

loss but not slenderness because a large body size may be more acceptable in the African-American culture" (McNabb et al., 1997, p. 1518). Yanek, Becker, Moy, Gittelsohn, and Koffman (2001) tested the effect of a yearlong intervention program that involved "standard group methods with weekly sessions (SI) [and] behavioral group model supplemented with a spiritual and church cultural component (SP), and a control group of non-spiritual, self-help interventions (SH) (p. 69). Yanek et al. (2001) found positive outcomes in weight, blood pressure, waist circumference, dietary energy and sodium intake.

Sbrocco et al. (2005) were able to provide data and research on the importance of church based interventions. For African-Americans, the church plays a central role in exchanging information, and "church-based interventions are able to use the inherent social support to reach those who might not otherwise seek support for their health concerns" (Sbrocco et al., 2005, p. 247). The interventions included education on eating patterns and exercise. While the resulting weight loss was less than comparable studies, this format of social support and education appear to be the standard for faith based interventions.

Fitzgibbon et al. (2005) used a randomized control design with a faith-based component to help women lose weight. The intervention was delivered using a culturally tailored "small group format and met twice weekly for 12 weeks" (Fitzgibbon et al., 2005, pp. 1394). The first "90 minute weekly meeting was divided between a 45 minute interactive didactic component and a 45 minute exercise component" (Fitzgibbon et al., 2005, pp. 1394). A second weekly 45-minute meeting consisted solely of exercise. The faith-based component was added by "incorporating a scripture each week in the content of the intervention" (Fitzgibbon et al., 2005, p. 1396). Even though the researchers did not find a statistically significant difference between the faith based weight loss group and other culturally tailored interventions for African-

American populations, it was unique because “no study has tested the efficacy of adding a formal faith component to a successful culturally tailored weight loss intervention of black women” (Fitzgibbon et al., 2005, p. 1399). The authors noted that the “addition of a structured faith component” to a weight loss program may “enhance the benefit of a culturally tailored weight loss intervention” (Fitzgibbon et al., 2005, p.1401).

Wilcox et al. (2007) conducted a three-year participant based research study, Health-e-AME, that used church leaders to encourage physical activity. The researchers found the program to be largely successful at increasing physical activity and improving the diets of participants. Baruth, Wilcox, Laken, Bopp, and Saunders (2008) provided follow-up research for the Health-e-AME. More specifically, the researchers looked at levels of pastor and spouse involvement and how these factors affected the levels of physical activity. Baruth et al. (2008) found that individuals who “were aware of the program were more likely to report moderate intensity physical activity and were more likely to report meeting physical activity recommendations at follow-up” (p. 307). Baruth et al. (2008) also found that churches that implemented the activity program had increases of their congregation meeting physical activity levels. This step is promising for faith based physical activity interventions. Bopp, Peterson, and Webb (2012) reviewed 27 studies that used faith based interventions for weight loss and found that the study design is promising as some studies were randomized and culturally appropriate, but “several issues associated with study design, sample size, and measurement issues are significant factors that may have limited the ability of these interventions to find positive outcomes” (Bopp, Peterson, & Webb, 2012, p. 474).

Dunkley et al. (2014) found significant improvements in blood glucose, blood pressure, and cholesterol measures in their study on the use of lifestyle interventions in the prevention of

diabetes. Sattin et al. (2016) added more to the lifestyle intervention data by studying the faith component inside churches. They conducted "a single-blinded, cluster-randomized, community-based trial" (Sattin et al., 2016, p. 88) in which participants "attend[ed] 12-weekly group 1-hour core sessions at their respective church" for both groups, but each group, Fit Body and Soul (FBAS) and Health Education (HE), had different interventions" (Sattin et al., 2016, p. 89) The FBAS group had the typical weight loss programming "such as strategies to reduce calories and dietary fat consumption, encouraging physical activity, and behavioral modification such as stimulus control, goal setting, and problem solving" (Sattin et al., 2016, p. 89) and the HE group's session included "information and risk improvement strategies about mental health and stress, heart disease and stroke, diabetes, cancer, smoking, injury and violence, asthma, nutrition, physical activity, HIV/AIDS, and communicating with one's health provider" (Sattin et al., 2016, p. 89). The participants in the FBAS program had significant reduction in weight compared to those in the HE program.

Social Relationships and Quality of Life

Physical activity is one element of quality of life. Social relationships are another prong. Three definitive types of social support exist: emotional, instrumental, and informational. Emotional support involves "having people available to listen, to care, to sympathize, to provide reassurance, and to make one feel valued, loved and cared for (Helgeson, 2003, p. 25). Instrumental support is "tangible assistance, involves people providing concrete assistance, such as help with household chores, lending money, or running errands" (Helgeson, 2003, p. 25). "Informational support involves the provision of information or guidance" (Helgeson, 2003, p. 25). Helgeson (2003) suggests the importance of matching the correct type of support to an existing stressor. For example, providing informational support to someone who is first

diagnosed with cancer may be viewed as callous; however, empathizing and providing emotional support better matches the situation. When discussing negative interactions, Helgeson (2003) stated that "negative interactions are not the opposite of positive interactions" (p. 28). Negative interactions do have a larger effect on quality of life, but negative interactions tend to be more powerful thus having a longer lasting effect on individuals (Helgeson, 2003). Cavallo et al. (2014) defined social support differently, and wrote that informational support is knowledge assistance, companionship support is cooperation and friendship, and esteem support is the intentional improvement of self-esteem.

Cavallo et al. (2014) reported that esteem support had a stronger effect on physical activity than companionship support, and informational support had the weakest effect on physical activity. The authors suggested that esteem support may lower the barriers to participation in physical activity (p. 963). Because esteem support may also improve a participant's self-efficacy, he or she may experience a change in self-perceptions. This supports Okun et al.'s (2003) earlier findings that receiving compliments from friends while engaging in physical activity may increase a person's motivation for continuing to exercise.

Chang, Wray, and Yeqiang (2014) found that "the links between social relationships and physical health or psychological well-being were enhanced in the presence of leisure activities" (p. 520). Physical leisure activities appeared to contribute the most to emotional and psychological needs, thus supporting the idea that leisure provides the "link between social relationships and health" (Chang et al., 2014, p. 521).

Achat et al. (1998) found that the size of a social network may moderate the effects of stress on an individual because social networks "have a more marked impact on health in situations of high levels of stressors" (p. 744). In a later study, Shiovitz-Ezra and Litwin (2012)

found that adults with more isolated social networks were more likely to engage in risky behavior including alcohol abuse, physical inactivity, and increased use of contemporary alternative medicine whereas those with a wider social network were more likely to be exposed to information on health and may feel social pressure for the "adoption and maintenance of health promoting behaviors" (p. 903). Those same people may create their own personal exercise routine to eliminate or give up health-damaging habits (Shiovitz-Ezra & Litwin, 2012).

Social relationships also provide positive experiences. Helgeson's (2003), Cavallo et al.'s (2014), and Chang et al.'s (2014) results support Frederickson's (2004) *Broaden and Build Theory of Positive Emotions*, in which positive emotions expand a person's feelings, behavior, and beliefs and help reduce lingering negativity while building resiliency and personal resources. Positive emotion also "broadens peoples' momentary thought-action repertoires, widening the array of the thoughts and actions that come to mind" (Frederickson, 2004, p. 1369). In addition, positive emotions help decrease negative emotions, making an individual more likely to engage in positive activities like physical activity. Helgeson's (2003), Cavallo's (2014), and Chang et al.'s (2014) findings are consistent with this theory while Cohn, Fredrickson, Brown, Mikels, and Conway (2009) found that positive emotions cultivate resiliency towards negative emotions. Positive emotions that come from social support and relationships are likely to cultivate increased interactions and experiences that further the positive emotions. Positive emotions serve as a foundation for quality of life.

Religion and Quality of Life

Religion is another mechanism that helps a person cope with life stressors. Tix and Frazier (1998) studied the use of religious coping during stressful life events and found that people who use religious coping have better outcomes. They also suggested that religious coping

is different for various denominations. For example, Protestants are found to have better adjustment to stressful events when using religious coping when compared to Catholics because they focus on an outcome happening by chance whereas Catholics focus on guilt reduction. As a result, Catholics had lower adjustment scores over time and their coping strategy of guilt reduction may not be appropriate when used for something like kidney transplant surgery (Tix & Frazier, 1998). Tarakeshwar et al. (2006) found that patients who had a belief in a higher power reported lessening physical symptoms and increased quality of life. However, those who used negative religious coping, such as blaming a higher power, reported lower quality of life scores.

Idler, McLaughlin, and Kasl (2009) found that defining oneself as very religious is "associated with seeing friends, having fewer depressive symptoms, greater positive affect, fewer somatic symptoms, better self-rated health, and finding life exciting" (p. 535). The companionship and caring for others inside religious communities may provide a path forward in offering benefits to others who are not religiously involved so that they too may have these benefits of increased quality of life. Peirano and Franz (2012) studied limb amputees and found that existential spirituality, the belief that a person's life has meaning and purpose, predicted life satisfaction.

Other research provides data on cancer, faith, and quality of life. People who have cancer and use active coping including "problem solving, planning, and seeking emotional support" (Canada et al., 2006, p. 102) have better outcomes than those who use negative coping strategies. The researchers went a step further and studied the relationship between religion, spirituality, active coping, and quality of life. Religion and spirituality "was associated with better overall QOL" and "the current study also revealed an association between higher levels of R/S and greater use of active coping" (Canada et al., 2006, p. 106). The findings also suggested that

active coping has an effect on religion and spirituality which in turn influences quality of life. Park, Malone, Suresh, Bliss, and Rosen (2008) added more information to the active coping literature. Park et al. (2008) found that positive religious coping was related to meaning in life, mental components of quality of life, and physical components of quality of life. These results further signify the importance of positive religious coping when dealing with a life-threatening illness.

Ferriss (2002) and Walsh, Bremer, Felgoise, and Simmons (2003) studied the effects of religion/faith on quality of life and found a positive correlation. Ferriss et al. (2002) found that the improvements in quality of life come from the concept of the *good life* and this rests heavily on Judeo-Christian ideals. Furthermore, Walsh et al. (2003) reported a significant relationship between quality of life and religiousness over time. Lastly, the WHOQOL SRPB (2006) specifically found "that spirituality, religion, and personal beliefs (SRPB) was highly correlated with all of the WHOQOL domains [and] suggested that SRPB should be more routinely addressed in assessment of QoL" (p. 1).

Canada, Murphy, Fitchett, and Stein (2016) determined that quality of life is directly affected by religious and spiritual beliefs. Using the data from the American Cancer Society's Studies of Cancer Survivors-II(SCS-II), which is a "national, cross sectional study of cancer survivors' QoL and psycho social functioning" (Canada, Murphy, Fitchett, & Stein, 2016, p. 81), the researchers measured spiritual well-being and functional QOL. "Faith makes significant and meaningful contributions to cancer survivors' functional QoL" (Canada, Murphy, Fitchett, & Stein, 2016, p. 81) and these results suggest that Ferriss (2002) and Walsh, Bremer, Felgoise, and Simmons (2003) misinterpreted their findings as those authors have stated that faith plays a minimal role in QOL. Canada, Murphy, Fitchett, and Stein (2016) concluded that longitudinal

studies need to be conducted, and if the results are replicated then the role of faith needs to be reconsidered with oncology patients.

The Church of Jesus Christ of Latter Day Saints (LDS) promotes positive health in the *Word of Wisdom* section of the Doctrine and Covenants. This was a revelation given to the prophet, Joseph Smith, and is now an essential part of the teachings in the LDS church. This covenant forbids the use of alcohol "inasmuch as any man drinketh wine or strong drink among you, behold it is not good" (Church of Latter Day Saints, Section 89). The covenant also states that "tobacco is not for the body, neither for the belly, and is not good for man" (Church of Latter Day Saints, Section 89). Similar to the LDS church with teachings of eating healthy and having an active lifestyle is The Seventh-Day Adventist church.

The Seventh-Day Adventist members "follow strict dietary guidelines, and healthy eating is part of the doctrinal teaching of the Church" and "recreational drugs, smoking, and alcohol" are not allowed (Tan, Chan, & Reidpath, 2016, p. 676). Seventh-Day members believe their "bodies are the temples of the Holy Spirit, [and] we are to care for them intelligently" (Seventh-Day Adventist Church, 2016). Members are taught to have "adequate exercise and rest" and "to adopt the most healthful diet possible and abstain from the unclean foods identified in the Scriptures" (Seventh-Day Adventist Church, 2016). Members also do not drink, smoke, or use illicit drugs since these drugs are harmful to a person's body.

Montgomery et al. (2007) analyzed the health data of a Seventh-Day Adventist cohort, and they found that "Blacks were less likely than Whites to be lifelong vegetarians and more likely to be overweight or obese [and] exercise levels were lower for Blacks than for Whites, but Blacks were as likely as Whites not to currently smoke or drink" (p. 1). Montgomery's et al. (2007) study compared Black and White Seventh-Day Adventist health members' against one

another in terms of lifestyle behaviors, and later compared these numbers against the general population of the United States. Black Seventh-Day Adventist members had less healthy lifestyle behaviors when compared to White Seventh-Day Adventist members, but Seventh-Day Adventist members had more positive lifestyle behaviors when compared to the total U.S. Black population.

McKenzie, Modeste, Marshak, and Wilson (2015) studied "the role of religious involvement and lifestyle practices among Black Canadian Seventh-Day Adventists" (p. 364) and found that "religious individuals tend to engage in fewer unhealthy activities due in part to the perception that their body belongs to God, and as such they need to take care of it by avoiding practices that are harmful" (p. 268). A large part of the Seventh-day Adventist population is "vegetarian, adhere to most of the positive lifestyle practices advocated by the SDA church, and are noted to have reduced risks of cardiovascular disease, cancer, and diabetes and increased life expectancy" (McKenzie et al., 2015, p. 269). Private religious practice plays a large part in these health behaviors, and more importantly the application and commitment to the principles in everyday life.

Commitment to religion, particularly the Mormon religion, is related to increased life satisfaction (Allen & Wang, 2014). Furthermore, Allen and Wang (2014) found that those who self-reported as perfectionists within Mormonism reported higher levels of self-esteem, life satisfaction, as well as reduced levels of depression and anxiety. Merrill, Madanut, and Lyon (2002) found that Mormons were more likely than non-Mormons to exercise regularly, meet activity guidelines, and are less likely to experience depression or anxiety. Allen (2011) found that LDS Polynesians were more likely to have healthy psychosocial well-being and collectivist coping styles. Collectivist coping "can be described as interdependent self-orientation which

stresses connectedness to others, social context [and the] maintenance of relationships" (Allen, 2011, p. 20). The collectivist coping style relates to social relationships and quality of life.

Lastly, men and women inside the Church of Latter Day Saints have fewer years of potential life lost (YPLL) due to cigarette smoking (Merrill, Hilton, & Daniels, 2003). The state of Utah has the lowest levels of cigarette smoking in the United States, and Merrill et al. (2003) found that 77.4 % of LDS men and 88.l % of LDS women have never smoked compared to the general population of Utah in which only 48.6% of men and 57% of women have never smoked. The religious pressure and church doctrine helps explain the decreased YPLL in the LDS population.

The relationships between quality of life, physical health, social relationships, and religion are well documented. Physical activity is associated with increased quality of life due to its inherent positive effects on health and mood, but only when the activity is regularly scheduled. Supportive social relationships leave a marked impact of support and allow a person to have a broader positive experience. This leaves the individual to be more resilient when encountering negative emotions and more open to new experiences. As indicated in this chapter, researchers who have been focused mainly on Christianity and Judaism have found a significant association between increased religiosity and quality of life. Mormonism has been less researched, but findings support a significant association between increased quality of life, life satisfaction, self-esteem, increased physical activity patterns, and reduced years of potential life lost due to cigarette smoking.

CHAPTER 3

METHODOLOGY

Overview

Quality of life, while somewhat elusive, can be a positive outcome of multiple events. Specifically, for this study the participants will complete the WHOQOL-BREF assessment in order to have a snapshot of their perceived quality of life. A person may think that health status and socioeconomic factors are the greatest influence on quality of life, but Ventegodt (2005) found that illness and good or bad events don't affect quality of life as much as the way we process the events. Satisfying social relationships and experiences help a person integrate events in the mind.

This study compared the quality of life in two groups: one group that exercises alone and the other exercising together in a class.

Research Questions

The following questions guide this research:

1. Is there a difference in the quality of life scores between those who exercise in a group (Group 1) and those who exercised alone (Group 2)?
2. What is the difference in the Physical domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?
3. What is the difference in the Social domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?

4. What is the difference in the Psychological domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?
5. What is the difference between the Environmental domain score on the World Health Organization Quality of Life-BREF [WHOQOL-BREF] between those who exercised alone and those who exercised in the group class?

Research Design

This study used a quantitative causal comparative design, or ex-post facto, because it explored the difference of quality life between one group that exercises in a class and a second that exercises alone.

The ex-post facto design was chosen for this study because the intervention, exercise, has already occurred. This approach does not require "any manipulation of variables or control groups" (Cottrell & McKenzie, p. 213) and attempts to "identify possible cause and effect relationships" (Cottrell & McKenzie, p. 213). Experimental studies randomized their participants and may have a control group to control for internal and external validity. Also, this design allows the study to fit within budget constraints.

Population

The United States Census Bureau (2015) estimated that 373,640 people live in the study area in Central California with a median age of 30.2. According to 2014 estimates of the population that is 25 years of age or older 20.3% have less than a high school education, 33.5% have a high school education or equivalency, 26.4% have some college without a degree, 7.9 have an associate's degree, 13.8% have a bachelor's degree, and 6.9% have a graduate or a professional

degree. Overall 79.7% of people who live in the study area in Central California have a high school education or greater (U.S. Census Bureau, 2014).

The median income for study area in Central California is $56,842 (U.S. Census Bureau, 2014). The unemployment rate for in the study area was 10.5% per July 2016 estimates (United States Department of Labor, 2016), and 20.2% of this population lives at or below the poverty level (U.S. Census Bureau, 2014). The location of the two churches, where the data is collected for this study, fall into two different zip codes.

The study was conducted at two locations. Group 1 included 10 adult female members of the Mormon Church who participate in a boot camp style exercise class that meets once a week for one hour at one church. The surrounding area of this church has an average age of 34.4 and an attainment rate of 83.6% for a high school diploma or greater. The median household income is $41,737 with a 25.5% rate of poverty.

Group 2 is comprised of 17 adult female members of another Mormon Church who do not participate in a group fitness class but who exercise independently for at least one hour each week. In order to participate in the research, the individuals will need to exercise for one hour alone each week; the style of exercise isn't important just the duration and frequency. The surrounding area of this church has an average age of 31.4 and an attainment rate of 82.3% for a high school diploma or greater. The median household income is $47,369 with a 21.1% rate of poverty. A member that attends this congregation has agreed to recruit members of this second group.

Informed Consent

An informed consent will be provided to all participants (see Appendix A). The informed consent will include an explanation and purpose of the research. The informed consent will also describe any foreseeable risks to the participants, and their option to withdraw from the study at

any time for any reason. This research is voluntary and the refusal to participate would have no penalty. Participants were informed of the potential benefits and outcomes from the research. Participants were asked to complete the form before completing the WHOQOL-BREF. The study was approved by the East Tennessee State University (ETSU) Institutional Review Boar (IRB) before I began collecting data.

Data Collection Procedure

The participants in both exercise groups are a convenience sample because a randomized selective sample of a Mormon church would require extramural funding. I surveyed Group 1 of in the exercise class that meet the requirements of the study, and Group 2 exercise alone using the WHOQOL-BREF (Appendix B). To ensure privacy, participants will be coded by gender and age and they will also complete an informed consent. The two groups will take the WHOQOL-BREF and the participants in each group will complete the forms independently.

The survey was given to Group 1 at the end of the exercise class as requested by the exercise instructor. The participants completed an informed consent form and then began the WHOQOL-BREF survey. I gave instructions on completing the form, and asked the class not to skip any of the 26 questions. I explained the meaning of physical health, psychological, social relationships, and environmental domains to the class. I also explained to the class that answers for the questions are for situations that have happened in the past two weeks.

My co-worker who attends the church introduced me to the members of Group 2. We met at the church as coordinated through my co-worker, and I gave the survey to Group 2. The participants completed an informed consent form and then began the WHOQOL-BREF survey. I gave instructions on completing the form, and asked the group not to skip any of the 26

questions. I explained the meaning of the different domains and that answers for the questions are for situations that have happened in the past two weeks.

The two groups took the WHOQOL-BREF and the participants in each group completed the forms independently. In addition, both groups completed the surveys alone on site to reduce any potential peer pressure. When completing the forms, participants were asked to complete it without help but were encouraged to ask for help if needed. The member and I assisted anyone needing help reading and completing the forms. The two groups were asked to not skip questions as this will invalidate the survey, and if the survey wasn't completed when turned in I asked the member to please complete the survey. If the survey wasn't completed after returning it to the member of the group, that survey was left out of the data analysis procedure. Upon completion of this study the results will be shared with the participants.

Instrumentation

The WHOQOL-BREF was used due to its established reliability and validity. The WHOQOL-BREF is a 26 question assessment that contains one question from "each of the 24 facets" that were part of the original WHOQOL-100 (Skevington, Lofty, & O'Connell, 2004, p. 301). The assessment uses a five point modified Likert scale that was designed and tested "to reflect the intensity, capacity, frequency, and evaluation" (Skevington, Lofty, & O'Connell, 2004, p. 301) of each question. The items on the WHOQOL-BREF ask 'how much', 'how completely', 'how often', 'how good', 'how satisfied', the person answering the survey has felt in the past two weeks (Skevington, Lofty, & O'Connell, 2004, p. 301). The internal consistency reliability of the WHOQOL-BREF is above .075 for domains 1 and 2, 0.51-0.77 for domain 3, and 0.65-0.87 for domain 4 (Skevington, Lotfy, & O'Connell, 2004).

Skevington et al. (2004) found that the WHOQOL-BREF assessment was reliable and valid, but noted that each domain should not be analyzed separately. The WHOQOL-BREF assessment is valid in multiple cultures and this is why I chose the assessment for this research. I emailed a signed user agreement to the World Health Organization at the following address: WHOQOL@who.int . The user agreement gives me permission to use the WHOQOL-BREF assessment with this specific study for one year, and according to the user agreement I will forward copies of my data to the WHO in order to further develop the instrument. The signed copy allowing me to use the WHOQOL-BREF is included in in Appendix C.

Data Analysis Procedure

The two variables being studied are quality of life as measured by the WHOQOL-BREF and setting for exercise (either alone or in a class). Data from the WHOQOL-BREF was calculated using Microsoft Excel to obtain the domain scores. The domain scores were entered into SPSS v 22.0, and the data was analyzed using the independent sample *t*-test. The *t*-test of independent samples was selected because the two groups are not related, and there is a chance that any differences of QOL in the sample are due factors outside of random chance. For statistical testing I selected a 95 % confidence level ($p<.05$).

CHAPTER 4

PRESENTATION AND ANALYSIS OF THE DATA

The purpose of the study was to determine if there is a difference in the quality life between adults who attend a boot camp style exercise class and those who exercise alone. Adults who were surveyed in the group exercise class were from various LDS churches in located in Central California that met at one church for the class. Those exercising alone are members of a single LDS congregation located at a specific location in Central California. The following questions guided this study:

1. Is there a difference in the quality of life scores between those who exercise in a group and those who exercised alone?
2. What is the difference in the Physical domain score on the World Health Organization Quality of Life-BREF (WHOQOL-BREF) between those who exercised alone and those who exercised in the group class?
3. What is the difference in the Social domain score on the World Health Organization Quality of Life-BREF between those who exercised alone and those who exercised in the group class?
4. What is the difference in the Psychological domain score on the World Health Organization Quality of Life-BREF between those who exercised alone and those who exercised in the group class?
5. What is the difference between the Environmental domain score on the World Health Organization Quality of Life-BREF between those who exercised alone and those who exercised in the group class?

Participants

The group exercise and the individual exercise groups consisted of Caucasian females who had a mean age of 36.4 and 34.8 respectively. The group sizes were different (group exercise group $n = 10$, and individual exercise group $n = 17$). All 17 of the individual exercise group's participants attained a post high school education; eight of the group exercise participants had attained a post high school education and two had completed high school. The Group Exercise participants met at the end of their exercise session at their class and the Individual Exercise participants meet at during a worship service at their worship site; both groups were asked to complete the WHOQOL-BREF. All completed surveys were included in the data analysis. Of note, none of the surveys missing values rate exceeded 20%. No participants needed additional support to complete the assessment and all participants completed the assessments alone.

Analysis of Data

The results from the study are presented with the corresponding research questions below:

1. **Difference in Quality of Life scores:**

   The *t*-test for independent samples was used to determine if there was a difference in responses between the participants in the Group Exercise class and the participants who exercised individually. There was not a significant difference in scores of quality of life (Individual Exercise group $M = 15.97$, $SD = .45$; Group Exercise group $M = 16.92$, $SD = 0.69$); $t\ (10) = 2.3$, $p = 0.60$. The 95% confidence intervals were similar [-.05, 1.95], [-.11, 1.99]. The results suggest that exercising with a group of people does not have significant effect on overall quality of life. Results of the analysis are found in Table 1.

Table 1

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
QOL	Equal variances assumed	.936	.371	2.313	6	.060	.94902	.41030	-.05495	1.95299
	Equal variances not assumed			2.313	5.158	.067	.94902	.41030	-.09606	1.99410

2. **Difference in Physical Domain Scores:**

The *t*-test for independent samples was used to determine if there was a difference in responses between the participants in the Group Exercise class and the participants who exercised individually. There was not a significant difference in scores in the physical domain (Individual Exercise group $M = 16.57$, $SD = 2.08$; Group Exercise group $M = 17.43$, $SD = 1.41$); $t(10) = 1.1$, $p = 0.26$. The 95% confidence intervals were similar [-.68, 2.39], [-.53, 2.25]. The results suggest that exercising with a group of people does not have significant effect on the Physical Quality of Life. Results of the analysis are found in Table 2.

Table 2

Independent Samples Test for Physical Domain

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Participants	Equal variances assumed	2.882	.102	1.149	25	.262	.85714	.74631	-.67992	2.39421
	Equal variances not assumed			1.271	24.405	.216	.85714	.67427	-.53325	2.24754

3. **Difference in Psychological Domain Scores:**

The *t*-test for independent samples was used to determine if there was a difference in responses between the participants in the Group Exercise class and the participants who exercised individually. There was a significant difference in scores in the psychological domain (Individual Exercise group $M = 15.5$, $SD = 1.66$; Group Exercise group $M = 16.8$, $SD = 1.03$); $t\ (10) = 2.17$, $p = 0.039$, the 95% confidence intervals were similar, CIs [-.68, 2.39], [-5.3, 2.25]. The results suggest that exercising with a group of people has an effect on Psychological Quality of Life. Results of the analysis are found in Table 3.

Table 3

Independent Samples Test for Psychological Domain

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Participants	Equal variances assumed	1.757	.197	2.173	25	.039	1.27059	.58482	.06613	2.47504
	Equal variances not assumed			2.448	24.859	.022	1.27059	.51894	.20151	2.33967

4. **Difference in Social Domain Scores:**

The *t*-test for independent samples was used to determine if there was a difference in responses between the participants in the Group Exercise class and the participants who exercised individually. There was a significant difference in scores in the social domain (Individual Exercise group $M = 15.76$, $SD = 2.12$; Group Exercise group $M = 17.4$, $SD = 1.93$; $t(10) = 2.07$, $p = 0.048$, the 95% confidence intervals were similar, CIs [.02, 3.38], [0.04, 3.37]. The results suggest that exercising with a group of people has an effect on Social Quality of Life. Results of the analysis are found in Table 4.

Table 4

Independent Samples Test for Social Domain

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Participants	Equal variances assumed	.001	.982	2.078	25	.048	1.70196	.81886	.01548	3.38844
	Equal variances not assumed			2.131	20.486	.045	1.70196	.79865	.03853	3.36539

5. **Difference in Environmental Domain Scores:**

The *t*-test for independent samples was used to determine if there was a difference in responses between the participants in the Group Exercise class and the participants who exercised individually. There was not a significant difference in scores in the environmental domain (Individual Exercise group $M = 16.03$, $SD = 1.74$; Group Exercise group $M = 16.38$, $SD = 0.92$); $t(10) = 0.58$, $p = 0.56$, the 95% confidence intervals were similar, CIs [.02, 3.39], [.04, 3.37]. The results suggest that exercising with a group of people does not have significant effect on the Environmental Quality of Life. Results of the analysis are found in Table 5.

Table 5

Independent Samples Test for Environmental Domain

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Participants	Equal variances assumed	2.531	.124	.589	25	.561	.35210	.59811	-.87972	1.58392
	Equal variances not assumed			.685	24.852	.500	.35210	.51389	-.70660	1.41080

Discussion

The *t*-test for independent samples was used to determine if there was a difference in responses between the participants in the Group Exercise class and the participants who exercised individually. There was no difference in overall quality of life and two of the four domains showed a statistically significant difference. The two domains that showed a statistically significant difference were the social and physiological domains. The results suggest that the difference in quality of life in the psychological and social domain of are due to something other than chance and are likely attributable to the impact of socialization on exercise.

CHAPTER 5

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

The purpose of this study was to determine if there was a difference in the quality life between adults who attend a boot camp style exercise class and those who exercise alone. Adults who were surveyed in the group exercise class were from various LDS churches in Central California. Those exercising alone were members of a single LDS congregation located in Central California. A post-hoc survey method was used for this study as the participants completed the World Health Organization Quality of Life-BREF (WHOQOL-BREF) after the exercise class or the exercise had already occurred. The following questions guided this study:

1. Is there a difference in the quality of life scores between those who exercise in a group and those who exercised alone?
2. What is the difference in the Physical domain score on the World Health Organization Quality of Life-BREF (WHOQOL-BREF) between those who exercised alone and those who exercised in the group class?
3. What is the difference in the Social domain score on the World Health Organization Quality of Life-BREF between those who exercised alone and those who exercised in the group class?
4. What is the difference in the Psychological domain score on the World Health Organization Quality of Life-BREF between those who exercised alone and those who exercised in the group class?
5. What is the difference between the Environmental domain score on the World Health Organization Quality of Life-BREF between those who exercised alone and those who exercised in the group class?

Limitations

This study has several limitations. The results only apply to these participants, and the number of participants may have been too few as there were only 17 total. Participants in the group exercise class were not selected based on where they live, so the demographic information on that particular church may not be reflected in the sample because where the person lives was not controlled for. The ages of the participants were not controlled for, and the sample contained only females.

Conclusions

The following conclusions can be drawn concerning the effect of exercising alone or with a group on quality of life.

1. There was a numerical difference but not a statistical difference between quality of life scores of the participants who exercised alone or with a group.
2. There was not a statistical difference in the Physical domain score on the World Health Organization Quality of Life-BREF (WHOQOL-BREF) between the participants who exercised alone or with a group.
3. There was a significant difference in the Social domain score on the World Health Organization Quality of Life-BREF (WHOQOL-BREF) between those who exercised alone and those who exercised in the group class.
4. There was a statistical difference in the Psychological domain score on the World Health Organization Quality of Life-BREF (WHOQOL-BREF) between those who exercised alone and those who exercised in the group class.

5. There was not a statistical difference between the Environmental domain score on the World Health Organization Quality of Life-BREF (WHOQOL-BREF) between those who exercised alone and those who exercised in the group class.

Discussion

There was not a statistically significant difference between the exercise group and the individual exerciser's quality of life scores. There was a statistically significant difference in the psychological and social domains and this falls within Helgeson's (2003), Cavallo's (2014), and Chang et al.'s (2014) research. The social support that exists within the group exercise structure, specifically Cavallo's (2014) esteem support, may alone enhance an individual who exercises with others perceived quality of life within psychological and social domains. The lack of a statistical difference in the environmental domain is to be expected as the survey took place within the same geographic area.

Group exercise appears to have an effect on a person's psychological and social quality of life, and this study was able to tease out the significant statistical difference between the social and psychological domains. Enhancing a person's social and psychological quality of life by using an exercise class is a significant finding, as there does not appear to be research comparing quality of life between group exercise and individual exercise.

Recommendations

This research was significant because there is limited data comparing group exercise to individual exercise. Research could be enhanced in the topic of comparing the difference in the quality life between adults who attend an exercise class and those who exercise alone by taking the following specific steps. First, having a larger number of volunteers in each group would increase the confidence interval and decrease the margin of error. Second, use surveys that assess

social relationships and psychological quality of life. The participants in this study had significant differences in the social and psychological domains; however, the WHOQOL-BREF assessment is unable to tease out specific areas of quality of life and can only assess an individual's overall quality of life thus the conclusion that there is not a statistically significant difference in quality of life between the two groups. Third, the parties interested in this topic of research, i.e. faith based organizations, exercise gyms, healthcare providers, and schools can lead the way in researching this topic by creating longitudinal experimental research that has a variety of populations that range from youth to older adults and people with disabilities.

Further investigations into social and psychological quality of life of participants in group exercise versus individual exercise are needed due to the lack of literature on this topic. Improved social and psychological quality of life can lead to increased positive health outcomes as previously discussed by Helgeson (2003), Federickson (2004), and Cavallo (2014). Increased positive emotions that a group exercise class may create helps an individual build resiliency (Helgeson, 2003), lower barriers to physical activity (Cavallo et al., 2014), all while creating positive emotions that broaden a person's thought-action response to various situations in a person's life (Federickson, 2004). Positive emotions are the foundation to quality of life and may help a person engage in positive health behaviors.

Our society's aging population would benefit in research on this topic. Low, Molzahn, and Schopflocher (2013) found that attitudes towards physical changes, psychological changes, and psychosocial changes were the largest predictor of health satisfaction in an elderly population across 20 countries. Low et al. (2013) concluded that a person's perception of their health and attitude is the largest indicator of quality of life. A person's behaviors are changed and modulated through social interactions, and a group exercise class for older adults could

change their views about their own body and health by reinforcing positive emotions and behaviors. The social and psychological support from modified group exercise classes in this population is another avenue for research and possible expansion. Understanding how these links can be improved through a person's own efforts is a worthwhile investment.

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APPENDICES

Appendix A: Informed Consent

Title of Research Study: Group Exercise Versus Individual Exercise and Effects on Quality of Life **Principal Investigator**: Everett Amburn
Principal Investigator's Contact Information: 770-823-2253, amburnj@gmail.com
Organization of Principal Investigator: East Tennessee State University

INFORMED CONSENT

This Informed Consent will explain about being a participant in a research study. It is important that you read this material carefully and then decide if you wish to voluntarily participate.

A. Purpose: This is a research study is to determine if there is a difference in the quality life between adults who attend a boot camp style exercise class and those who exercise alone.

B. Procedures: The procedures include filling out the World Health Organization Quality of Life questionnaire. You will be asked to share contact information, marital status, gender, highest education, and date of birth. The survey includes 26 questions that ask questions about your physical well being, social well being, emotional well being, spiritual well being, your environment, and level of independence. You will be asked to complete the survey without the help of others and independently in order to enhance the survey's effectiveness. If you do not complete the survey it will be excluded from the data analysis.

Once you have completed the survey your participation in the study will be complete. After the study is concluded all participants will be notified of the results by using your contact information you have provided.

C. Voluntary Participation: Your participation in this research experiment is voluntary. ***You may choose not to participate.*** If you decide to participate in this research study, you can change your mind and quit at any time. If you choose not to participate, or change your mind and quit, the benefits or treatment to which you are otherwise entitled will not be affected. You may quit by calling Everett Amburn, at 770-8232253. You will be told immediately if any of the results of the study should reasonably be expected to make you change your mind about continuing to participate.

D. Contact for Questions: If you have any questions, problems, or research-related medical problems at any time, you may call Everett Amburn, at 770-823-2253. You may also call the Chairperson of the ETSU Institutional Review Board at 423.439.6054 for any questions you may have about your rights as a research participant. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423.439.6055 or 423.439.6002. You will be contacted through the contact information you voluntarily supply when taking the WHOQOL-BREF.

Title of Research Study: Group Exercise Versus Individual Exercise and Effects on Quality of Life **Principal Investigator**: Everett Amburn

Contact Information: The results of this research study can be reported to you. Individual results and results from the study will be available. Please mark on the line that best describes what you want:

_____ **YES** I would like to be contacted with the results of the study.

_____ **NO** I do not want to be contacted with the results of the study.

If you marked yes in the section above please provide the best method of contact for you:

_____
_____
_____
_____
_____

Please return this section to the researcher. Thank you!!

THE WORLD HEALTH ORGANIZATION QUALITY OF LIFE (WHOQOL) -BREF

The World Health Organization Quality of Life (WHOQOL)-BREF

WHOQOL-BREF

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5

17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5

20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

Do you have any comments about the assessment?

_____

_____

[The following table should be completed after the interview is finished]

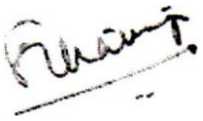
		Equations for computing domain scores	Raw score	Transformed scores*	
				4-20	0-100
27.	**Domain 1**	(6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18 ⑥ + ⑥ + ⑥ + ⑥ + ⑥ + ⑥ + ⑥	a. =	b:	c:
28.	**Domain 2**	Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26) ⑥ + ⑥ + ⑥ + ⑥ + ⑥ + ⑥	a. =	b:	c:
29.	**Domain 3**	Q20 + Q21 + Q22 ⑥ + ⑥ + ⑥	a. =	b:	c:
30.	**Domain 4**	Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25 ⑥ + ⑥ + ⑥ + ⑥ + ⑥ + ⑥ + ⑥ + ⑥	a. =	b:	c:

* See Procedures Manual, pages 13-15

Appendix C: WHO User Agreement

Please confirm your agreement with the foregoing by signing and returning one copy of this letter to WHO, whereupon this letter agreement shall become a binding agreement between User and WHO.

WHO:



Dr. Somnath Chatterji

Health Statistics and Health Information Systems (HSI)

World Health Organization

Avenue Appia

Geneva 27 CH 1 21 1 Switzerland

Date:

USER:

By: Everett J. Auburn

Title: Recreation Therapist / Graduate Student

Institution: East Tennessee State University

Address: 6721 Aldebaran Lane
Bakersfield, CA 93312

Date: 7-16-16

VITA

EVERETT JACKSON AMBURN

Education:	Public Schools, Roswell, Georgia B.S. Recreation Therapy, Western Carolina University, Cullowhee, North Carolina M.S. Allied Health, East Tennessee State University, Johnson City, Tennessee
Professional Experience:	Recreation Therapist, Mountain Youth Academy, Mountain City, Tennessee 2010-2015 Recreation Therapist, California Department of Corrections and Rehabiliation, Wasco, California, 2015-2017
Professional Activity:	Member, American Therapeutic Recreation Association, 2010 2017 Member, California Parks and Recreation Society, 2015-2017